STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: May 24, 2016

FROM: Melilotus M. Dube
Environmental Manager

AT (OFFICE): Department of Transportation
Bureau of Environment

SUBJECT Dredge & Fill Application
Thornton-Woodstock, 40404

TO Gino Infascelli, Public Works Permitting Officer
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NH DOT Bureau of Highway Design for the subject major impact project. This project is classified as major per Env-Wt 303.02(p). The project consists mainly of resurfacing Interstate 93 from Exit 29 in Thornton to Exit 30 in Woodstock. Some drainage improvements will be included which will impact wetlands associated with Hubbard Brook and Leeman's Brook. This work is necessary to maintain the integrity of the crossings.

The lead people to contact for this project are Tobey Reynolds, Highway Design (271-2171 or treynolds@dot.state.nh.us) or Meli Dube, Environmental Manager, Bureau of Environment (271-3226 or mdube@dot.state.nh.us).

This project was presented at Natural Resource Agency Meetings on January 20, 2016, see enclosed minutes. Mitigation was discussed with Lori Sommer via e-mail correspondence on May 20, 2016 and will total $5,040.00, to be paid upon receipt of the permit approval notice.

A payment voucher has been processed for this application (Voucher #440688) in the amount of $202.60.

If and when this application meets with the approval of the Bureau, please send the permit directly to Meli Dube, Environmental Manager, Bureau of Environment.

MRU:mmd
Enclosures

cc:
BOE Original
Carol Henderson, NH Fish and Game
Michael Hicks, US Army Corps of Engineers
Maria Tur, US Fish and Wildlife Service
Mark Kern, Environmental Protection Agency
District Construction Engineer, NHDOT Bureau of Construction
Contract Administrator, NHDOT Bureau of Construction
Town of Woodstock (4 copies via certified mail)
Edna Feighner, NH Division of Historical Resources
Pemigewasset River Local Advisory Committee

S:\Environment\PROJECTS\THORNTON\40404\wetlands\WETAPP - Design.doc

NHDES-W-06-012

WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau
Land Resources Management

Check the status of your application: www.des.nh.gov/onestop

RSA/Rule: RSA 482-A/ Env-Wt 100-900

1. REVIEW TIME:
Indicate your Review Time below. Refer to Guidance Document A for instructions.

☒ Standard Review (Minimum, Minor or Major Impact) ☐ Expedited Review (Minimum Impact only)

2. PROJECT LOCATION:
Separate applications must be filed with each municipality that jurisdictional impacts will occur in.

ADDRESS: **Interstate-93**	TOWN/CITY: **Thornton, Woodstock**		
TAX MAP: **Thornton – Map , Woodstock – Map**	BLOCK: **NA**	LOT: **NA**	UNIT: **NA**
USGS TOPO MAP WATERBODY NAME: **Leemans Brook, Hubbard Brook, Pemigewasset River** ☐ NA	STREAM WATERSHED SIZE: **1.51 sq mi Leemans Brook** ☐ NA		
LOCATION COORDINATES (If known): **43° 55' 53.26 N 71° 39' 53.26" W** ☒ Latitude/Longitude ☐ UTM ☐ State Plane			

3. PROJECT DESCRIPTION:
Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

The New Hampshire Department of Transportation is proposing to rehabilitate approximately 7.0 miles of Interstate-93, northbound and southbound lanes, beginning at the bridge over the Pemigewasset River (State bridge #247/079 & 247/080) near Exit 29 in Thornton, NH and ending at the bridge over the Pemigewasset River (State bridge #201/068 & 202/068) north of Exit 30 in Woodstock, NH.

The project will consist of the following activities: rehabilitation of the pavement; repair and replacement of guardrail; drainage repair; rock scaling and associated tree clearing; deck and joint repairs to the bridges over US Route 3 in Thornton, Merrill Access Road, Mirror Lake Road, and US Route 3 in Woodstock; and replacement of a culvert headwall. There will be no proposed road widening, and the pavement overlay will match the existing pavement width.

4. SHORELINE FRONTAGE

☒ NA This lot has no shoreline frontage. SHORELINE FRONTAGE:

Shoreline frontage is calculated by determining the average of the distances of the actual natural navigable shoreline frontage and a straight line drawn between the property lines, both of which are measured at the normal high water line.

5. RELATED PERMITS, ENFORCEMENT, EMERGENCY AUTHORIZATION, SHORELAND, ALTERATION OF TERRAIN, ETC...

NHDES Shoreland Permit by Notification

6. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:
See the Instructions & Required Attachments document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: NHB 15 - 2718 .

b. ☒ Designated River the project is in ¼ miles of: Pemigewasset River ; and date a copy of the application was sent to Local River Advisory Committee: 5/24/16

☐ NA

7. APPLICANT INFORMATION (Desired permit holder)

LAST NAME, FIRST NAME, M.I.: **Reynolds, Tobey, L**

TRUST / COMPANY NAME: **NH Department of Transportation** | MAILING ADDRESS: **7 Hazen Drive / P.O. Box 483**

TOWN/CITY: **Concord** | STATE: **NH** | ZIP CODE: **03302-0483**

EMAIL or FAX: **TReynolds@dot.state.nh.us** | PHONE: **603-271-7421**

ELECTRONIC COMMUNICATION: By initialing here: TR, I hereby authorize DES to communicate all matters relative to this application electronically

8. PROPERTY OWNER INFORMATION (If different than applicant)

LAST NAME, FIRST NAME, M.I.:

TRUST / COMPANY NAME: | MAILING ADDRESS:

TOWN/CITY: | STATE: | ZIP CODE:

EMAIL or FAX: | PHONE:

ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize DES to communicate all matters relative to this application electronically

9. AUTHORIZED AGENT INFORMATION

LAST NAME, FIRST NAME, M.I.: **Peace, Kimberly R.** | COMPANY NAME: **Hoyle, Tanner & Associates, Inc.**

MAILING ADDRESS: **150 Dow Street**

TOWN/CITY: **Manchester** | STATE: **NH** | ZIP CODE: **03101**

EMAIL or FAX: **kpeace@hoyletanner.com** | PHONE: **603.669.5555**

ELECTRONIC COMMUNICATION: By initialing here **KRP** , I hereby authorize DES to communicate all matters relative to this application electronically

10. PROPERTY OWNER SIGNATURE:

See the Instructions & Required Attachments document for clarification of the below statements

By signing the application, I am certifying that:

1. I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.
2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document.
3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
6. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47.
7. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to be reviewed for the presence of historical/ archeological resources.
8. I authorize DES and the municipal conservation commission to inspect the site of the proposed project.
9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
10. I understand that the willful submission of falsified or misrepresented information to the New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of DES correspondence. DES will not forward returned mail.

⇨ Property Owner Signature	Print name legibly	Date
Tobey Reynolds	Tobey Reynolds	5/6/16

MUNICIPAL SIGNATURES

11. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

⇨	Print name legibly	Date

DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.
2. Expedited review requires the Conservation Commission signature be obtained **prior** to the submittal of the original application to the Town/City Clerk for signature.
3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will reviewed in the standard review time frame.

12. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

⇨ Town/City Clerk Signature	Print name legibly	Town/City	Date

DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.
2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;
3. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
4. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board; and
5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

1. Submit the original permit application form bearing the signature of the Town/ City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery.

13. IMPACT AREA:

For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact

Permanent: impacts that will remain after the project is complete.

Temporary: impacts not intended to remain (and will be restored to pre-construction conditions) after the project is complete.

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.		TEMPORARY Sq. Ft. / Lin. Ft.	
Forested wetland	29-	☐ ATF	31-	☐ ATF
Scrub-shrub wetland	-	☐ ATF	-	☐ ATF
Emergent wetland	103-	☐ ATF	155-	☐ ATF
Wet meadow	-	☐ ATF	-	☐ ATF
Intermittent stream	-	☐ ATF	-	☐ ATF
Perennial Stream / River	85/8	☐ ATF	483/20	☐ ATF
Lake / Pond	-	☐ ATF	-	☐ ATF
Bank - Intermittent stream	-	☐ ATF	-	☐ ATF
Bank - Perennial stream / River	64/18	☐ ATF	63/27	☐ ATF
Bank - Lake / Pond	-	☐ ATF	-	☐ ATF
Tidal water	-	☐ ATF	-	☐ ATF
Salt marsh	-	☐ ATF	-	☐ ATF
Sand dune	-	☐ ATF	-	☐ ATF
Prime wetland	-	☐ ATF	-	☐ ATF
Prime wetland buffer	-	☐ ATF	-	☐ ATF
Undeveloped Tidal Buffer Zone (TBZ)	-	☐ ATF	-	☐ ATF
Previously-developed upland in TBZ	-	☐ ATF	-	☐ ATF
Docking - Lake / Pond	-	☐ ATF	-	☐ ATF
Docking - River	-	☐ ATF	-	☐ ATF
Docking - Tidal Water	-	☐ ATF	-	☐ ATF
TOTAL	281/26		732/47	

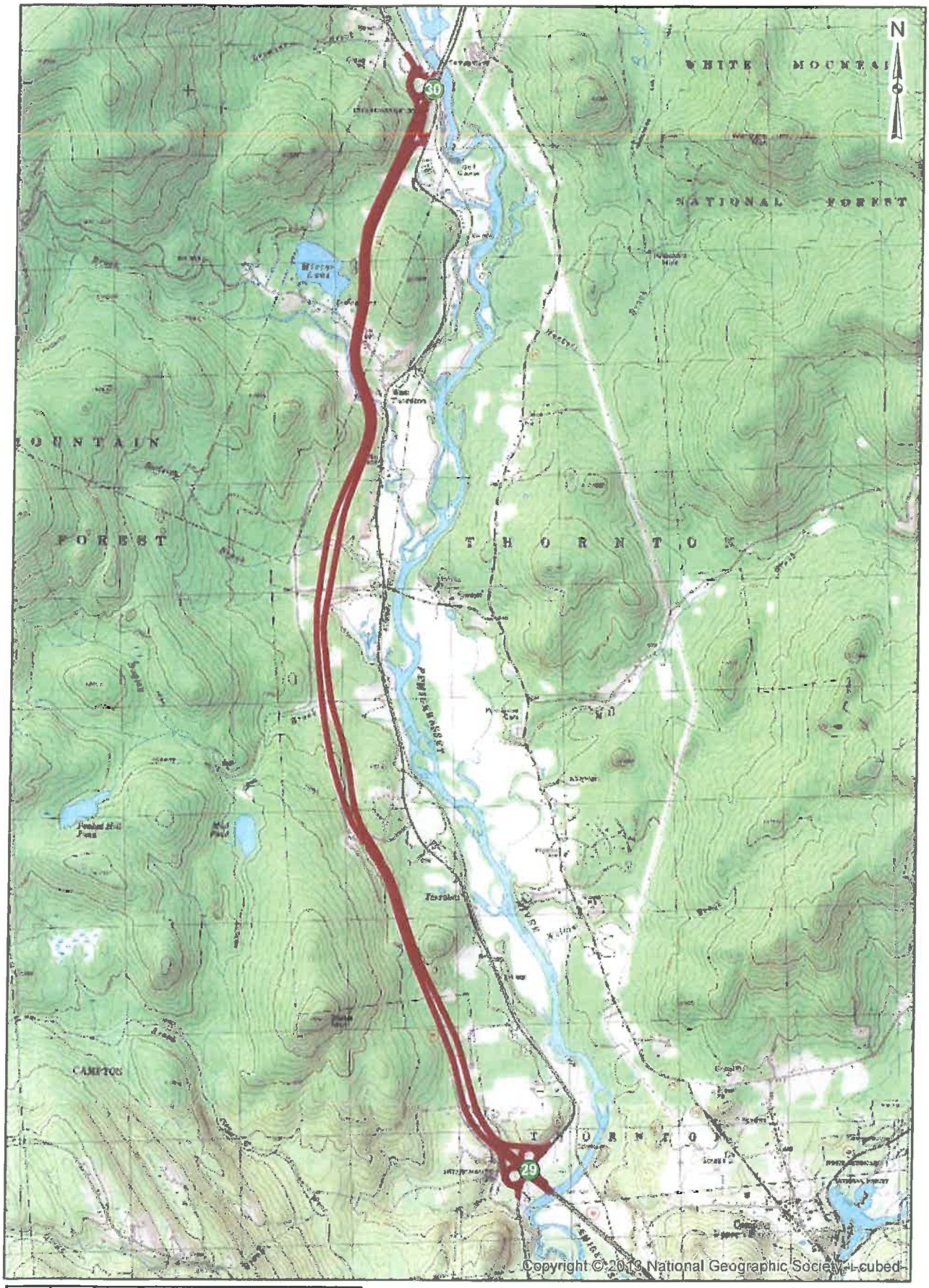
14. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction

☐ Minimum Impact Fee: Flat fee of $ 200

☒ Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking)	**1013** sq. ft.	X	$0.20 =	**$ 202.60**
Temporary (seasonal) docking structure:	**0** sq. ft.	X	$1.00 =	**$ 0**
Permanent docking structure:	**0** sq. ft.	X	$2.00 =	**$ 0**
Projects proposing shoreline structures (including docks) add $200 =				**$ 0**
Total =				**$ 202.60**
The Application Fee is the above calculated Total or $200, whichever is greater =				**$ 202.60**

Thornton-Woodstock 40404



WETLANDS PERMIT APPLICATION - ATTACHMENT A
MINOR & MAJOR 20 QUESTIONS

Water Division/ Wetlands Bureau/ Land Resources Management
Check the Status of your application: www.des.nh.gov/onestop

RSA/ Rule: RSA 482-A, Env-Wt 100-900

Env-Wt 302.04 Requirements for Application Evaluation - For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project's design in assessing the impact of the proposed project to areas and environments under the department's jurisdiction. Respond with statements demonstrating:

1. The need for the proposed impact.

The New Hampshire Department of Transportation is proposing to rehabilitate approximately 7.0 miles of Interstate 93 northbound and southbound lanes beginning at the bridges over the Pemigewasset River (State bridge #247/079 & 247/080) near the intersection Exit 29 in Thornton, NH and ending at the bridges over the Pemigewasset River (State bridge #201/068 & 202/068) north of Exit 30 in Woodstock, NH.

The project will consist of the following activities and is required to preserve and rehabilitate the existing travelway pavement; repair and replacement of guardrail to meet current standards; drainage repairs; remove loose rock by hand scaling and associated tree clearing for rock cut areas; joint and deck repairs to the bridges over US Route 3 in Thornton, Merrill Access Road, Mirror Lake Road, and US Route 3 in Woodstock; and replacement of a deteriorated culvert headwall at US Route 3 over Leemans Brook. There will be no proposed road widening, and the pavement overlay will match the existing pavement width.

2. That the alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site.

The project has been designed to avoid and minimize wetland impacts to the extent practicable. The proposed work is needed to provide for a safe and sustainable road in this location. The project is limited only to those repairs and temporary erosion controls that are required in order to meet the project need.

3. The type and classification of the wetlands involved.

The project area includes temporary and permanent impacts to the following wetlands or their buffers, moving north to south through the project area, as depicted on the project plans:

Leemans Brook and associated wetlands:

R2UB1: Riverine, Lower Perennial, Unconsolidated Bottom, Cobble-Gravel
PEM1Ex: Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated, Excavated BANK

Wetlands associated with Hubbard Brook:

PF01/4E: Palustrine, Forested, Broad-Leaved Deciduous/Needle-leaved Evergreen that is seasonally Flooded/Saturated

4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters.

It is anticipated that there will be no negative impact to the nearby wetlands and surface waters. Upstream and downstream wetlands will not be affected by this project. The drainage and flow pattern of the Leeman's Brook and Hubbard Brook are not being altered and all erosion controls will be in place prior to the start of construction.

5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area.

The wetlands within the project area are not rare in this area of New Hampshire. Bagley Brook, Burleigh Brook and Hubbard Brook are identified as Highest Ranked Habitat in NH by the NH Wildlife Action Plan (2016) for their natural undeveloped buffers and ability to function as wildlife corridors. The project will not lead to nor cause degradation to these wetlands.

6. The surface area of the wetlands that will be impacted.

The project will permanently impact 281 sq ft and temporarily impact 732 sq ft of jurisdictional resources as follows:
Temporary impacts to palustrine forested wetlands: 31 sq ft
Permanent impacts to palustrine forested wetlands: 29 sq ft
Temporary impacts to emergent wetlands: 155 sq ft
Permanent impacts to emergent wetlands: 103 sq ft
Temporary impacts to the bank of a perennial stream: 63 sq ft
Permanent impacts to the bank of a perennial stream: 64 sq ft
Temporary impacts to the bed of a perennial stream: 483 sq ft
Permanent impacts to the bed of a perennial stream: 85 sq ft

7. The impact on plants, fish and wildlife including, but not limited to:
   a. Rare, special concern species;
   b. State and federally listed threatened and endangered species;
   c. Species at the extremities of their ranges;
   d. Migratory fish and wildlife;
   e. Exemplary natural communities identified by the DRED-NHB; and
   f. Vernal pools.

The project has been reviewed by the NH Natural Heritage Bureau (NHNHB) and the US Fish and Wildlife Service (USFWS).

a. **There are no rare species or species of special concern within the project area.**
b. **The NHNHB indicated that although there are known records in the project area, there will be no impacts due to the minimal scope of work. The USFWS Information for Planning and Conservation tool (Consultation Code 05E1NE00-2016-SLI-0853), dated January 26, 2016, identified the northern long-eared bat (NLEB) as having potential to be present in the project area. The project meets the criteria for the USFWS Range-wide Programmatic Informal Biological Assessment for NLEB and May Affect but is Not Likely to Adversely Affect NLEB according to the Range-wide Programmatic Informal Consultation Form which has been submitted to USFWS for review. This finding is a result of the commitment to perform all clearing of suitable habitat trees during the winter hibernation, which is from November 1 to April 14 in this area. Please find the supplementary documentation of this coordination elsewhere in the application package.**
c. **There are no species at the extremities of their ranges within the project area.**
d. **There will be no impact to migratory fish or wildlife as a result of the proposed work.**
e. **There are no exemplary natural communities within the project area.**
f. **There are no vernal pools within the project area.**

8. The impact of the proposed project on public commerce, navigation and recreation.

The project will have no effect on public commerce or recreation and will improve the ability for the public to navigate safely through this portion of New Hampshire.

9. The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake, the applicant shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.

The project will cause no interference with aesthetic interests of the public.

10. The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area.

The project will cause no interference with the public rights of passage or access.

11. The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.

The proposed project is for the maintenance of existing infrastructure and is designed to extend the stability and lifespan of the roadway and crossings and will cause no adverse effects to upstream or downstream abutters.

12. The benefit of a project to the health, safety, and well being of the general public.

The project will benefit the public health, safety and well being by repairing the Interstate-93 roadway surface and improving safety as a result of replacing guardrail and repairing bridges.

13. The impact of a proposed project on quantity or quality of surface and ground water. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site.

Upon completion of the project, the project will cause no adverse effects on the quality or quantity of surface or groundwater entering or exiting the project site.

14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

The project will not cause an increase in flooding, erosion or sedimentation. The existing headwall for the Leemans Brook culvert is being replaced and drainage structures are being repaired in order to improve the existing conditions.

15. The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

The project will have no effect on currents or produce adverse wave energy which may cause damage or harm.

16. The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.
The project will not add cumulatively to any potential future impacts.
17. The impact of the proposed project on the values and functions of the total wetland or wetland complex.
There will be no permanent impact on the value and function of the wetland areas.
18. The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication.
No such sites are located within the project area.
19. The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.
There are no such resources within the project area.
20. The degree to which a project redirects water from one watershed to another.
The project does not redirect water from one watershed area to another.

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: January 20, 2016
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban
Ron Crickard
Randy Talon
Kerry Ryan
Mark Hemmerlein
Marc Laurin
Charlie Blackman
Peter Salo
Maggie Baldwin
Sam Fifield
Don Lyford
John Sargent
Rebecca Martin
Tobey Reynolds
Meli Dube
Chris Carucci
Laurel Pushee
Darrell Elliott
Steven Liakos
Carol Niewola
Keith Cota

Federal Highway Administration
Jamie Sikora

Army Corps of Engineers
Michael Hicks

NHDES
Gino Infascelli
Lori Sommer

NH Fish & Game
Carol Henderson

Consultants/Public Participants

Mike Pillsbury
Christine Perron
Josh Lund
Kimberly Peace
Jason Ayotte
Thom Marshall
Vicki Chase
Jennifer Riordan
Glen Smart
John Pelletier
Sean Tiney
Richard Fixler
John Trottior
Mark Hutchins
Chris Bean
Leo Tidd

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:
(minutes on subsequent pages)

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

Sommer, NHDES, requested to see better photos to determine whether or not this work will be considered maintenance of existing infrastructure and the need for mitigation.

Bridge work on the Hampton Falls River bridge will include partial to full depth deck repairs and patching of spalled concrete on the abutments, which will require temporary impacts to the river. Bridge work on the Taylor River bridge will include partial to full depth deck repair and the use of a snooper truck to patch spalled concrete, which eliminates any wetland impacts in the river. MD confirmed with MH that it is no longer necessary to coordinate with the National Oceanic and Atmospheric Administration regarding Essential Fish Habitat due to the elimination of the work within the channel of the Taylor River. MD also indicated that the NH Natural Heritage Bureau had been contacted previously, but will be updated after the meeting with an updated scope of work.

Gino Infascelli inquired about impacts to the prime wetland buffer at the NH Route 101/US Route 1 interchange in Hampton. MD indicated that this area is completely upland and the work will be limited to resurfacing and guardrail replacement, which will have no impact on the functions and values of the designated prime wetland. GI also reminded the group that this project will be a major impact project in public waterrequiring review and approval by the Governor and Council, which adds to the wetland permitting time frame.

HTA indicated that there are two cemeteries within 25' of the project area, however, there is no proposed excavation in these areas and no impacts are anticipated. MD confirmed that cultural resources coordination has been completed and the NH Division of Historical Resources has issued a "No Historic Properties Affected" memo.

This project was previously reviewed at the October 21, 2015 Natural Resource Agency Meeting.

Thornton-Woodstock 40404

This project includes rehabilitating approximately 6.8 miles of Interstate 93 northbound and southbound barrels beginning at the bridge over the Pemigewasset River (State bridge #247/079 & 247/080) near the intersection Exit 29 in Thornton, NH and ending at the bridge over the Pemigewasset River (State bridge #201/068 & 202/068) north of Exit 30 in Woodstock, NH. The project is scoped to rehabilitate the pavement and replace in-kind guardrail, drainage maintenance, rock scaling and associated tree clearing, as well as bridge maintenance to the bridges over US Route 3 in Thornton, Merrill Access Road, Mirror Lake Road, and US Route 3 in Woodstock. In addition, advertisement is anticipated in November, 2016.

Hoyle, Tanner and Associates (HTA) provided a project overview with plans and pictures summarizing the proposed conditions and identifying the wetland impacts and shoreland areas. Wetland and shoreland impacts are associated with drainage maintenance work which will replace several deteriorated slope pipes as well as the headwall holding twin 72" reinforced concrete pipes which carry Leemans brook under the highway to the Pemigewasset River. Gino Infascelli, NHDES, noted that this stream crossing is located within ¼ mile of the Pemigewasset River, which is a designated river, and is therefore considered a Tier 3 stream crossing. Wetland delineations have not been completed at this time, however, estimated impacts based on initial field reviews include 500 s.f. of temporary wetland impacts and 800 s.f. of permanent wetland impacts. There are no anticipated protected shoreland impacts outside of the anticipated wetland impacts.

HTA discussed tree clearing associated with rock scaling on the cliffs adjacent to the highway. This clearing will be limited to the appropriate time of year restrictions in order to avoid impacts to

the northern long-eared bat. Meli Dube (MD), NHDOT Bureau of Environment, indicated that the NH Natural Heritage Bureau has been consulted and has no concerns.

HTA indicated that bridge work will be limited to deck and joint work and will not impact any natural resources in the area. MD confirmed that there are no concerns for encountering asbestos containing materials during the proposed bridge work.

This project has not previously been reviewed at a Natural Resource Agency Meeting.

Ocean Ave, non-federal, TBD

Laurel Pushee provided an overview of the project. The scope of the project is to add a drop to the roadway side of the pipe and replace a 10' long 6 inch diameter pipe running from the roadway under the sidewalk. The existing pipe is a corrugated metal pipe used for excess roadway runoff/drainage during periods of high tide and storm surges. Proposed work consists of replacing the metal pipe with a different material (PVC) pipe to avoid corrosion, and excavating/ scouring the area around the outlet to remove sand deposits from past storm events and phragmites immediately adjacent to the pipe . This project also proposes to place fabric and stone rip rap over the scour area to inhibit the regrowth of phragmites around the pipe outlet. The District is anticipating working with Department of Agriculture to obtain a permit to treat the phragmites in this area concurrent to this, and future, proposed work. There are also exemplary communities in the area indicated by a positive NHB hit; the details on the species present are unknown at this time as the file results have not yet been reviewed.

Laurel also mentioned that this project was an interim/immediate fix being implemented by District to mitigate the larger issue with drainage in the area. This will be addressed by another, larger, project coming through this area in the future.

Gino expressed a concern for adding a catch basin to the roadside end of the pipe, citing that this could create stagnant water (mosquito breeding habitat) and could promote the presence of e-coli. He mentioned that these concerns that had been brought up by our district staff in the past for this area.

Gino also mentioned that this marsh was recently designated as prime wetland (2011) and suggested that Laurel touch base with the conservation commission relative to the project prior to sending in the wetland application.

Lori Sommer indicated that a good contact for treating and managing Phragmites populations would be Lenny Lord from Rockingham County Conservation District. Laurel mentioned that she had already reached out to Doug Cygan, and that he would be assisting district 6 with some of the treatment in this area.

Matt Urban mentioned that the larger project discussed involves an area which has already received a wetland permit. This permit will need to apply for an extension if the work is not completed this year. Matt also indicated that any additional impacts should apply for a new/separate permit.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Melilotus Dube

From: Matt Urban
Sent: Friday, May 20, 2016 1:30 PM
To: Melilotus Dube
Subject: FW: Thornton-Woodstock 40404

Fyi...

From: Sommer, Lori [mailto:Lori.Sommer@des.nh.gov]
Sent: Friday, May 20, 2016 1:20 PM
To: Matt Urban
Subject: RE: Thornton-Woodstock 40404

Hi Matt,
This seems reasonable – looks good to go forward.

Lori

From: Matt Urban [mailto:MUrban@dot.state.nh.us]
Sent: Tuesday, May 17, 2016 9:38 AM
To: Sommer, Lori
Cc: Melilotus Dube
Subject: Thornton-Woodstock 40404

HI Lori,

I believe Meli may have tried coordinating with you previously to get concurrence on the proposed mitigation for this project.

I have reviewed the impact plans and honed in on the only sheet that we see triggering the need for mitigation.

I have attached that sheet and commented in red to show where we took our measurements from.
You will note on the Bank Right side we didn't include a LF to be included with the mitigation calculations because we were hoping you would agree that where this is the pivot point between the existing and newly proposed headwall the stone that's being placed in front of it would have been considered for the protection of existing infrastructure. (If you don't agree just let me know and we will include the 5 LF of Bank Right in our calculations when we submit.)

I have attached the Arm Fund calculator assuming no mitigation on bank right.
&
I have also attached the Arm Fund calculator if Bank Right does need to be included.

Please let me know which you feel is acceptable and more appropriate.
A response at your earliest convenience would be greatly appreciated.

Thanks,
Matt

DES AQUATIC RESOURCE MITIGATION FUND STREAM PAYMENT CALCULATION		
INSERT LINEAR FEET OF IMPACT on BOTH BANKS AND CHANNEL	Right Bank	0.00
	Left Bank	13.0000
	Channel	8.0000
	TOTAL IMPACT	21.0000
	Stream Impact Cost:	$4,200.00
	DES Administrative cost:	
		$840.00
********* TOTAL ARM FUND STREAM PAYMENT********		
		$5,040.00

StreamStats Version 3.0

Basin Characteristics Ungaged Site Report

Date: Tues Mar 22, 2016 9:45:41 AM GMT-4
Study Area: New Hampshire
NAD 1983 Latitude: 43.9593 (43 57 34)
NAD 1983 Longitude: -71.6808 (-71 40 51)

Label	Value	Units	Definition
DRNAREA	1.51	square miles	Area that drains to a point on a stream
CSL10_85	719	feet per mi	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known
APRAVPRE	4.024	inches	Mean April Precipitation
WETLAND	0	percent	Percentage of Wetlands
OUTLETX	980505	State plane coordinates	Basin outlet horizontal (x) location in state plane coordinates
OUTLETY	531885	State plane coordinates	Basin outlet vertical (y) location in state plane coordinates
CENTROIDX	975071.9	State plane coordinates	Basin centroid horizontal (x) location in state plane coordinates
CENTROIDY	532366.6	State plane coordinates	Basin centroid vertical (y) location in state plane units
BSLDEM30M	25.079	percent	Mean basin slope computed from 30 m DEM
ELEVMAX	2335.228	feet	Maximum basin elevation
TEMP	61.719	degrees F	Mean Annual Temperature
TEMP_06_10	59.572	degrees F	Basinwide average temperature for June to October summer period
CONIF	11.3856	percent	Percentage of land surface covered by coniferous forest
MIXFOR	24.266	percent	Percentage of land area covered by mixed deciduous and coniferous forest
PREBC0103	8.98	inches	Mean annual precipitation of basin centroid for January 1 to March 15 winter period
PREG_06_10	19.1	inches	Mean precipitation at gaging station location for June to October summer period
PREG_03_05	9.7	inches	Mean precipitation at gaging station location for March 16 to May 31 spring period
LC11IMP	0.39	percent	Percentage of impervious area determined from NLCD 2011 impervious dataset
LC11DEV	1.44	percent	Percentage of land-use from NLCD 2011 classes 21-24
MINTEMP_W	11.847	degrees F	Mean winter minimum air temperature over basin surface area
PREBC_1112	9.65	inches	Mean annual precipitation of basin centroid for November 1 to December 31 period

PRECIPCENT	48.9	inches	Mean Annual Precip at Basin Centroid
PRECIPOUT	46.8	inches	Mean annual precip at the stream outlet (based on annual PRISM precip data in inches from 1971-2000)
SNOFALL	97.843	inches	Mean Annual Snowfall

ERROR

JMA 4/6/16

StreamStats Report - Leemans Brook @ US Route 3, Woodstock

Region ID:
NH
Workspace ID:
NH20160406130248508000
Clicked Point (Latitude, Longitude):
43.95921,-71.68088
Time:
2016-04-06 15:03:12 -0400

NHDOT 40404 Thornton-Woodstock US Route 3 Headwall Repair

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.5	square miles

Parameter Code	Parameter Description	Value	Unit
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	722	feet per mi
APRAVPRE	Mean April Precipitation	4.024	inches
WETLAND	Percentage of Wetlands	0	percent
OUTLETX	Basin outlet horizontal (x) location in state plane coordinates	980475	State plane coordinates
OUTLETY	Basin outlet vertical (y) location in state plane coordinates	531855	State plane coordinates
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	975067.5	State plane coordinates
CENTROIDY	Basin centroid vertical (y) location in state plane units	532367	State plane coordinates
BSLDEM30M	Mean basin slope computed from 30 m DEM	25.095	percent
ELEVMAX	Maximum basin elevation	2335.228	feet
TEMP	Mean Annual Temperature	61.718	degrees F
TEMP_06_10	Basinwide average temperature for June to October summer period	59.572	degrees F
PREBC0103	Mean annual precipitation of basin centroid for January 1 to March 15 winter period	8.98	inches
PREG_06_10	Mean precipitation at gaging station location for June to October summer period	19.1	inches
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.35	percent
LC11DEV	Percentage of land-use from NLCD 2011 classes 21-24	1.36	percent
MINTEMP_W	Mean winter minimum air temperature over basin surface area	11.847	degrees F
PREBC_1112	Mean annual precipitation of basin centroid for November 1 to December 31 period	9.65	inches
SNOFALL	Mean Annual Snowfall	97.847	inches

Parameter Code	Parameter Description	Value	Unit
PRECIPOUT	Mean annual precip at the stream outlet (based on annual PRISM precip data in inches from 1971-2000)	46.8	inches
PRECIPCENT	Mean Annual Precip at Basin Centroid	48.9	inches
CONIF	Percentaqe of land surface covered by coniferous forest	11.3947	percent
MIXFOR	Percentage of land area covered by mixed deciduous and coniferous forest	24.2853	percent
PREG_03_05	Mean precipitation at gaging station location for March 16 to May 31 spring period	9.7	inches

Peak-Flow Statistics Parameters [100.00 Percent Peak Flow Statewide SIR2008 5206]

Parameter	Value	Min Limit	Max Limit
Drainage Area	1.5	0.7	1290
Mean April Precipitation	4.024	2.79	6.23
Stream Slope 10 and 85 Method	722	5.43	543
Percent Wetlands	0	0	21.8

Peak-Flow Statistics Disclaimers [100.00 Percent Peak Flow Statewide SIR2008 5206]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Peak-Flow Statistics Flow Report [100.00 Percent Peak Flow Statewide SIR2008 5206]

Statistic	Value	Unit	Prediction Error
2 Year Peak Flood	119	ft^3/s	--
5 Year Peak Flood	210	ft^3/s	--
10 Year Peak Flood	288	ft^3/s	--
25 Year Peak Flood	394	ft^3/s	--
50 Year Peak Flood	482	ft^3/s	--

Statistic	Value	Unit	Prediction Error
100 Year Peak Flood	587	ft^3/s	--
500 Year Peak Flood	839	ft^3/s	--

Peak-Flow Statistics Citations

Olson, S.A., 2009, Estimation of flood discharges at selected recurrence intervals for streams in New Hampshire: U.S.Geological Survey Scientific Investigations Report 2008-5206, 57 p. (http://pubs.usgs.gov/sir/2008/5206/)

Seasonal Flow Statistics Parameters [100.00 Percent Low Flow Statewide]

Parameter	Value	Min Limit	Max Limit
Drainage Area	1.5	3.26	689
Jan to Mar Basin Centroid Precip	8.98	5.79	15.1
Mar to May Gage Precipitation	9.7	6.83	11.5
Jun to Oct Gage Precipitation	19.1	16.5	23.1
Mean Annual Temperature	61.718	36	48.7
Jun to Oct Mean Basinwide Temp	59.572	52.9	64.4
Maximum Basin Elevation	2335.228	260	6290
Percent Coniferous Forest	11.3947	3.07	56.2
Mean Basin Slope from 30m DEM	25.095	3.19	38.1
Percent Mixed Forest	24.2853	6.21	46.1

Seasonal Flow Statistics Disclaimers [100.00 Percent Low Flow Statewide]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Seasonal Flow Statistics Flow Report [100.00 Percent Low Flow Statewide]

Statistic	Value	Unit	Prediction Error
Jan to Mar15 60 Percent Flow	1.286	dim	--
Jan to Mar15 70 Percent Flow	1.086	dim	--
Jan to Mar15 80 Percent Flow	0.912	ft^3/s	--

NH Department of Transportation
Bureau of Environment
NHDOT Project #40404, Thornton-Woodstock
Federal Aid Project X-A004(389)

Env-Wt 904.09 Alternative Design
TECHNICAL REPORT

Env-Wt 904.09(a) - If the applicant believes that installing the structure specified in the applicable rule is not practicable, the applicant may propose an alternative design in accordance with this section.

Please explain why the structure specified in the applicable rule is not practicable (Env-Wt 101.69 defines practicable as *available and capable of being done after taking into consideration costs, existing technology, and logistics in light of overall project purposes.)*

The culvert conveying Leemans Brook under US Route 3 is classified as a Tier 3 Stream Crossing, because the contributing watershed is larger than 640 acres and the culvert is located within the Pemigewasset River Designated River Corridor. Based on the 1.5 square mile drainage area, a compliant structure would be a 17' clear span structure.

It is not practicable at this time to replace the existing twin/double 72" reinforced concrete pipe culverts because 1) the culverts are functional and do not need to be replaced, and 2) the anticipated costs to complete such work, including any potential traffic impacts that could occur from such action, would be prohibitive to such action since the culverts are not failing. However, replacement of the existing mortar rubble masonry headwall and wing walls that are failing and deteriorated is proposed. The new headwall will be oriented to improve inlet geometry, resulting in a slight increase in capacity.

The existing culvert does not experience roadway flooding, velocity issues, or other concerns relative to the crossing, and is similar in size and orientation as the upstream crossing under the I-93 Exit 30 Southbound Ramps, which are in good condition.

The proposed alternative meets the specific design criteria for Tier 2 and Tier 3 crossings to the *maximum extent practicable*, as specified below.

Env-Wt 904.05 Design Criteria for Tier 2 and Tier 3 Stream Crossings – New Tier 2 stream crossings, replacement Tier 2 crossings that do not meet the requirements of Env-Wt 904.07, and new and replacement Tier 3 crossings shall be designed and constructed:

(a) In accordance with the NH Stream Crossing Guidelines.

The NHDOT 40404 Thornton-Woodstock project will not replace the existing twin/double 72" reinforced concrete pipe culvert- project work is limited to the headwall replacement only, as detailed above.

(b) With bed forms and streambed characteristics necessary to cause water depths and velocities within the crossing structure at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the stream crossing.

The culverts upstream are in good condition, and the stream is well-defined with a cobble, gravel bottom. Replacement of the headwall will not change the characteristics of the crossing. Stone fill is proposed within the excavation limits to stabilize the grading and provide protection from potential future scour at the wing wall ends.

(c) To provide a vegetated bank on both sides of the watercourse to allow for wildlife passage.

Stone Fill, Class B intermixed with humus is only proposed in the bank to protect the wing walls and within wing wall excavation limits and promote vegetation. The existing vegetated bank will be maintained outside the proposed stone fill limits, and the roadway slopes will remain established with humus and seed.

(d) To preserve the natural alignment and gradient of the stream channel, so as to accommodate natural flow regimes and the functioning of the natural floodplain.

The proposed headwall orientation will improve flow and inlet geometry by removing the protruding reinforced concrete pipe ends and orientating the face of the headwall perpendicular to the stream. Today, the existing headwall is parallel to the roadway and is skewed to the existing stream and culvert pipe ends extend slightly beyond the face of the headwall.

(e) To accommodate the 100-year frequency flood, to ensure that (1) there is no increase in flood stages on abutting properties; and (2) flow and sediment transport characteristics will not be affected in a manner which could adversely affect channel stability.

No significant changes are proposed to the crossing, therefore existing flows and flood elevations will be maintained.

(f) To simulate a natural stream channel.

Regrading and headwall orientation changes are proposed to eliminate the protruding culvert ends and improve inlet geometry. No changes to the stream channel as it exists are proposed.

(g) So as not to alter sediment transport competence.

Eliminating the protruding culvert ends will reduce sediment collection and improve transport during larger storm events.

Env-Wt 904.09(c)(3) – The alternative design must meet the general design criteria specified in Env-Wt 904.01:

Env-Wt 904.01
(a) Not be a barrier to sediment transport;

No significant changes are proposed to the crossing, therefore existing flows and flood elevations will be maintained. The culvert as it exists is not a barrier to sediment transport.

(b) Prevent the restriction of high flows and maintain existing low flows;

No significant changes are proposed to the crossing, therefore existing flows and flood elevations will be maintained.

(c) Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction;

Eliminating the protruding culvert ends will improve aquatic life movement during lower flow events.

(d) Not cause an increase in the frequency of flooding or overtopping of banks;

No significant changes are proposed to the crossing, therefore existing flows and flood elevations will be maintained.

(e) Preserve watercourse connectivity where it currently exists;

No significant changes are proposed to the crossing, which connects the watercourse under US Route 3.

(f) Restore watercourse connectivity where: (1) Connectivity previously was disrupted as a result of human activity(ies); and (2) Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both;

Watercourse connectivity is maintained as there will be no significant changes to the existing crossing.

(g) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and

Eliminating the protruding culvert ends will reduce the potential for aggradation, and the larger stone fill will protect the headwall inlet and wing wall areas from scour and erosion.

(h) Not cause water quality degradation.

No significant changes are proposed to the crossing, which connects the watercourse under US Route 3. There will be no effect on water quality.

*****Note: An alternative design for Tier 1 stream crossings must meet the general design criteria (Env-Wt 904.01) only to the *maximum extent practicable*.**

NEW HAMPSHIRE NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Melilotus Dube
New Hampshire Department of Transportation
7 Hazen Drive
Concord, NH 03301

From: NH Natural Heritage Bureau

Date: 8/20/2015 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau of request submitted 8/17/2015

NHB File ID: NHB15-2718 **Applicant:** Melilotus Dube

Location: Thornton, Woodstock
I-93 North and South barrels, MM 88.4-95.1

Project Description: NHDOT Thornton-Woodstock 40404. Pavement preservation with minor drainage and guardrail maintenance.

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

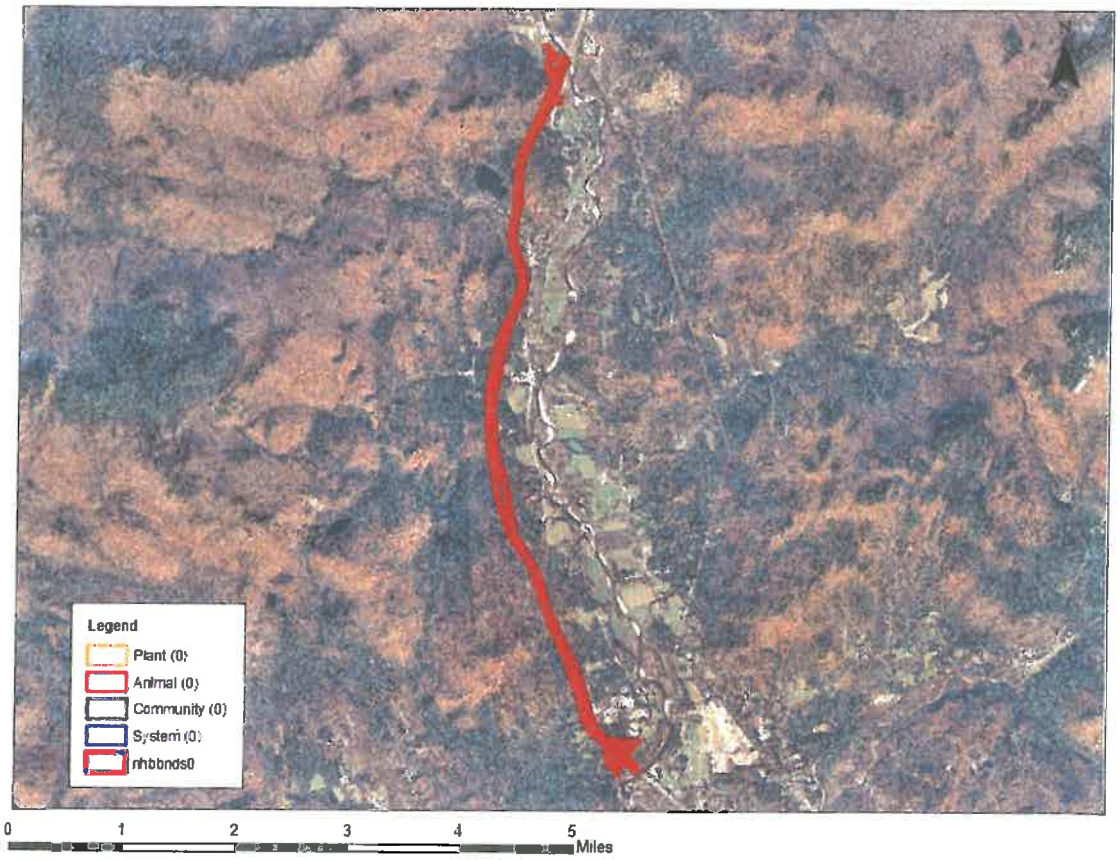
It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 8/17/2015, and cannot be used for any other project.

Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Rd.
Concord, NH 03301

MAP OF PROJECT BOUNDARIES FOR: **NHB15-2718**

NHB15-2718



Department of Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Rd.
Concord, NH 03301

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 COMMERCIAL STREET, SUITE 300
CONCORD, NH 03301
PHONE: (603)223-2541 FAX: (603)223-0104
URL: www.fws.gov/newengland

Consultation Code: 05E1NE00-2016-SLI-0853
Event Code: 05E1NE00-2016-E-01130
Project Name: Thornton-Woodstock 40404

January 26, 2016

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Thornton-Woodstock 40404

Official Species List

Provided by:

New England Ecological Services Field Office
70 COMMERCIAL STREET, SUITE 300
CONCORD, NH 03301
(603) 223-2541
http://www.fws.gov/newengland

Consultation Code: 05E1NE00-2016-SLI-0853
Event Code: 05E1NE00-2016-E-01130

Project Type: TRANSPORTATION

Project Name: Thornton-Woodstock 40404
Project Description: Pavement rehabilitation on Interstate 93 from Exit 29 to Exit 30. Work also includes associated minor drainage repairs/resetting and guardrail repair/replacement/extension as necessary. Headwall repair on twin 72" pipes carrying Leeson Brook will also be included.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:

Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Grafton, NH

United States Department of Interior
Fish and Wildlife Service

Project name: Thornton-Woodstock 40404

Endangered Species Act Species List

There are a total of 1 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Mammals	Status	Has Critical Habitat	Condition(s)
Northern long-eared Bat *(Myotis septentrionalis)*	Threatened		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and Federal Transit Administration (FTA)
Range-wide Programmatic Informal Consultation for
Indiana Bat and Northern Long-eared Bat

Project Submittal Form for FHWA, FRA, FTA, and
Transportation Agencies *Updated February 2016*

In order to use the programmatic informal consultation to fulfill Endangered Species Act consultation requirements, transportation agencies must use this submittal form to submit project-level information for all may affect, not likely to adversely affect (NLAA) determinations to the appropriate U.S. Fish and Wildlife Service (Service) field office prior to project commencement. For more information, see the Standard Operating Procedure for Site Specific Project(s) Submission in the User's Guide.

In submitting this form, the transportation agency ensures that the proposed project(s) adhere to the criteria of the range-wide programmatic informal BA. Upon submittal of this form, the appropriate Service field office may review the site-specific information provided and request additional information. If the applying transportation agency is not notified within 14 calendar days of emailing the Project Submittal Form to the Service field office, it may proceed under the range-wide programmatic informal consultation.

Further instructions on completing the submittal form can be found by hovering your cursor over each text box.

---

1. Date: May 11, 2016
2. Lead Agency: FHWA

This refers to the Federal governmental lead action agency initiating consultation; select FHWA or FRA as appropriate

3. Requesting Agency: NHDOT
    a. Name: Meli Dube
    b. Title: Environmental Manager
    c. Phone: (603) 271-1612
    d. Email: mdube@dot.state.nh.us
4. Consultation Code[1]: 05E1NE00-2016-SLI-0853
5. Project Name(s): Thornton-Woodstock 40404

[1] Available through IPaC System Official Species List: https://ecos.fws.gov/ipac/

6. Project Description:
Please attach additional documentation or explanatory text if necessary

Rehablitation of 7.0 miles of Interstate 93 northbound and southbound lanes, beginning at the Bridge over the Pemigewasset River near Exit 29 in Thornton and ending at the bridge over the Pemigewasset River just north of Exit 30 in Woodstock. The project will consist of the following activites: rehabilitation of the pavement; repair and replacement of guardrail; drainage repair; rock scaling and associated tree clearing in a 10' wide swatch from the egde of the cliff faces; deck and joint repairs to the bridges over US Route 3 in Thornton, Merrill Access Road, Mirror Lake Road and US Route 3 in Woodstock; and replacement of a culvert headwall at the crossing carrying Leeman's Brook under I93 at Exit 30.

7. Other species from Official Species List: None indicated on IPAC Official Species List

No effect – project(s) are inside the range, but no suitable habitat – see additional information attached

May Affect – see additional information provided for those species (either attached or forthcoming

8. For Ibat/NLEB, if Applicable, Explain Your No Effect Determination

No effect – project(s) are outside the species' range (submittal form complete)

No effect – project(s) are inside the range but no suitable summer habitat (submittal form complete)

No effect – project(s) are completely within existing road/rail surface and do not involve percussive or other activities that increase noise above existing traffic/background levels (submittal form complete)

No effect – project(s) includes maintenance, alteration, or demolition of bridge(s)/structure(s) and indicate(s) no signs of bats from results of a bridge/structure assessment (submittal form complete)

No effect – project(s) do not involve construction activities (e.g., bridge assessments, property inspections, development of planning and technical studies, property sales, property easements, and equipment purchases) (submittal form complete)

Otherwise, please continue below.

9. For Ibat/NLEB, if Applicable, Explain Your May Affect, Not Likely to Adversely Affect Determination (without implementation of AMMs)

NLAA – project(s) are inside the range but negative bat presence/absence (P/A) surveys (submittal form complete)

NLAA – project(s) conducted completely within existing road/rail surface and involve percussive activities (submittal form complete)

NLAA – project(s) are within areas that contain suitable forested habitat but do not remove or alter trees (e.g., landscaping rest areas, mowing, brush removal, sign or guiderail replacement, and stormwater management) (submittal form complete)

NLAA – project(s) of slash pile burning (submittal form complete)

NLAA –wetland or stream protection activities are associated with wetland mitigation and do not clear suitable habitat (submittal form complete)

Otherwise, please continue below.

For Ibat/NLEB, if applicable, continue to complete the submittal form to explain your may affect, not likely to adversely affect determination **(with implementation of AMMs)**

10. Affected Resource/Habitat Type

✓ Trees

✓ Bridge

Other Non-Tree Roosting Structure (e.g., building)

Other (please explain):

11. For Tree Removal Projects:

a. Please verify that no documented roosts or foraging habitat will be impacted and that project is within 100 feet of existing road surface: ✓

b. Please verify that all tree removal will occur during the inactive season[2]: ✓

c. Timing of clearing: November 1 2016 - April 14 2017

d. Amount of clearing: < 1 acre

[2] Coordinate with local Service field office for appropriate dates.

12. For Bridge/Structure Work Projects:

a. Proposed work: Deck and joint repairs

b. Timing of work: Spring/summer 2017

c. Evidence of bat activity on bridge/structure:

None, Bridge Assessment completed on May 3, 2016

d. If applicable, verify that superstructure work will not bother roosting bats in any way: N/A- Bridge Assessment indicated no bat usage

e. If applicable, verify that bridge/structure work will occur only in the winter months: N/A- Bridge Assessment indicated no bat usage

13. Please confirm the following:

Proposed project(s) adhere to the criteria of the range-wide programmatic informal BA (see Section 2.0). ✓

All applicable AMMs will be implemented, including[3]:

Tree Removal AMM 1: ✓

Tree Removal AMM 2: ✓

Tree Removal AMM 3: ✓

Tree Removal AMM 4: ✓

Bridge AMM 1:

Bridge AMM 2: ✓

Bridge AMM 3:

Bridge AMM 4:

Structure AMM 1:

Structure AMM 2:

Structure AMM 3:

Structure AMM 4:

Lighting AMM 1:

Lighting AMM 2:

[3] See AMMs Fact Sheet (Appendix C) for more information on the following AMMs.

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Projects with Minimal Potential to Cause Effects

Date Reviewed:	1/27/2016		
Project Name:	Thornton-Woodstock		
State Number:	40404	**FHWA Number:**	X-A004(389)
Environmental Contact:	Meli Dube	**DOT**	
Email Address:	mdube@dot.state.nh.us	**Project Manager:**	Tobey Reynolds

Project Description: The proposed project involves pavement rehabilitation on Interstate 93 from Exit 29 to Exit 30. The work will also include drainage improvements which involves replacing failed slope pipes along the highway and the replacement of a headwall holding twin pipes which carry Leeman's Brook through the Exit 30 Ramp system. Guardrail will also be repaired, replaced and extended where necessary to meet current safety standards. Routine rock scaling and associated clearing on cliff faces and tops within the maintained roadway area is also included.

Please select the applicable undertaking type(s):

☒	1. Modernization and general highway maintenance **that may require additional highway right-of-way or easement**, and which is **not within the boundaries of a historic property or district,** including:
	a. Culvert replacement when the culvert is less than 60" in diameter and excavation for replacement is limited to previoulsy disturbed areas b. guardrail replacement, provided any extension does not connect to a bridge older than 50 years, and there is no change in access associated with the extension
☒	2. Non-historic bridge and culvert maintenance, renovation, or total replacement, **that may require minor additional right-of-way or easement**, and which is **not within the boundaries of a historic property or district**, including:
	a. replacement of maintenance of drainage pipes and culverts made of steel, plastic and concrete Choose an item.
☐	3. Historic bridge maintenance activities within the limits of existing right-of-way, including:
	Choose an item. Choose an item.
☐	4. Stream stabilization and restoration activities (including removal of debris or sediment obstructing the natural waterway, or any non-invasive action to restore natural conditions).
☐	5. Construction of bicycle lanes and pedestrian walkways, sidewalks, shared-use paths and facilities, small passenger shelters, and alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons, **not within the boundaries of a historic property or district**.
☐	6. Installation of bicycle racks, **not within the boundaries of a historic property or district**.
☐	7. Recreational trail construction, **not within the boundaries of a historic property or district**.
☐	8. Recreational trail maintenance when done on existing alignment.
☐	9. Modernization, maintenance, and safety improvements of railroad facilities within the existing railroad or highway right-of-way, **not within the boundaries of a historic property or district, and no historic railroad features are impacted,** including, but not limited to:
	Choose an item. Choose an item.
☐	10. Acquisition or renewal of scenic, conservation, habitat, or other land preservation easements
☐	11. Installation of Intelligent Transportation Systems.

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Projects with Minimal Potential to Cause Effects

Please describe how this project is applicable under Appendix B of the Programmatic Agreement.

The proposed project is primarily a highway modernization and maintenance project which involves resurfacing and updates guardrail runs to meet current safety standards. Drainage maintenance and updates are also included under Appendix B of the Programmatic Agreement and will be executed in this project via the replacement of slope drain pipes and one headwall replacement. Finally, routine rock scaling and the associated clearing is a normal highway maintenance activity and is necessary in areas with cliff faces adjacent to the roadway.

NHDOT in-house projects: Please append photographs, USGS maps, design plans and as-built plans, if available, for review.

Figure 1. Headwall Replacement at Leeman's Brook

Figure 2. Example of Rock Scaling Location

Coordination Efforts:

Has an RPR been submitted to NHDOT for this project?	No	NHDHR R&C # assigned?	Click here to enter text.
Please identify public outreach effort contacts; method of outreach and date:	Initial contact letters sent to Town officials on January 27, 2016.		

Finding: (To be filled out by NHDOT Cultural Resources Staff)

☒	**No Potential to Cause Effects**	☐	**No Historic Properties Affected**
This finding serves as the Section 106 Memorandum for your environmental documents, no further coordination is necessary.			
☐	**This project does *not* comply with Appendix B, and will continue under the Section 106 review process outlined in 36 CFR 800.3-800.7. Please contact NHDOT Cultural Resources Staff to determine next steps.**		

NHDOT comments: Rock scaling is a maintenance activity with No Potential to cause effects.

Jill Edelen — NHDOT Cultural Resources Staff

1/27/2016 — Date

Coordination of the Section 106 process should begin as early as possible in the planning phase of the project (undertaking) so as not to cause a delay.

Project sponsors should not predetermine a Section 106 finding under the assumption that an undertaking conforms to the types listed in Appendix B until this form is signed by the NHDOT Bureau of Environment Cultural Resources Program staff.

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Projects with Minimal Potential to Cause Effects

Every project shall be coordinated with, and reviewed by the NHDOT-BOE Cultural Resources Program in accordance with the Cultural Resources Programmatic Agreement among the Advisory Council on Historic Preservation, Federal Highway Administration, NH Department of Transportation, and the State Historic Preservation Office. In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

If any portion of the undertaking is not entirely limited to any one or a combination of the types specified in Appendix B (with, or without a portion that is included as a type listed in Appendix A), please continue discussions with NHDOT Cultural Resources staff.

This No Potential to Cause Effect or No Historic Properties Affected project determination is your Section 106 finding, as defined in the Programmatic Agreement.

Should project plans change, please inform the NHDOT Cultural Resources staff in accordance with Stipulation VII of the Programmatic Agreement.

US Army Corps of Engineers
New England District

New Hampshire Programmatic General Permit (PGP)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See PGP, GC 5, regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*	X	
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	X	
2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org, specifically the book Natural Community Systems of New Hampshire.		X
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	X	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)	X	
2.5 The overall project site is more than 40 acres.	X	
2.6 What is the size of the existing impervious surface area?		77.1 ac
2.7 What is the size of the proposed impervious surface area?		77.1 ac
2.8 What is the % of the impervious area (new and existing) to the overall project site?		15 %
3. Wildlife	Yes	No
3.1 Has the NHB determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require a NHB determination.)	X	
3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.	X	

3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the PGP, GC 21?	X	
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?	X	
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?	N/A	
5. Historic/Archaeological Resources		
For a minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) shall be sent to the NH Division of Historical Resources as required on Page 5 of the PGP**	X	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.
** If project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

U.S. Army Corps of Engineers
New Hampshire Programmatic General Permit (PGP)
Appendix B Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

Thornton-Woodstock, I-93 Roadway Rehabilitation

Explanations For Checklist Answers

1.1 Per the Draft 2014 305(b)/303(d) Surface Water Assessment, the project is located within the 1-mile buffer of the section of the Pemigewasset River in Thornton, Assessment Unit ID # NHRIV700010205-12, that is severely impaired (TMDL needed) for aquatic life due to pH from an unknown source. The project has been designed to not add to these impairments, and will slightly improve project drainage conditions by repairing failed slope drains within the uplands adjacent to Hubbard Brook.

2.1 The project area includes the following waterbodies jurisdictional to USACOE: Leemans Brook; Hubbard Brook; and the Pemigewasset River.

2.2 The New Hampshire Natural Heritage Bureau (NHB) was consulted and confirmed that there are no Special Aquatic Sites, shellfish beds, special wetlands or vernal pools within the project area.

2.3 The intent of this project is to address deficiencies in Interstate 93, including replacing several deteriorated slope pipes as well as the headwall holding twin 72" reinforced concrete pipes which carry Leemans brook under the highway to the Pemigewasset River. The existing culvert dimensions and hydrology would be maintained; the culvert currently does not affect sediment transport & wildlife passage.

2.4 There will be temporary and permanent impacts to vegetation within the identified riparian areas to allow for ingress/egress of project contractors to work areas, guardrail replacement and drainage improvements. All areas of impact have been minimized to the extent practicable and are unavoidable in order to meet the project purpose and need. Temporary impacts will be restored in place.

3.1 The New Hampshire Natural Heritage Bureau (NHB) Datacheck Tool was used to review the project area for NHB records in the vicinity of the project. It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, it is not expected that it will be impacted by the proposed project. Additionally, the USFWS IPaC Tool identified the project area as in the range of the northern long-eared bat (NLEB). This project meets the criteria for the Range-wide Informal Biological Assessment so potential impacts to NLEB were reviewed with USFWS through the Range-wide Programmatic Informal Consultation process. Because this project will require tree clearing within suitable habitat but this clearing will occur during the winter hibernation season, this project has a May Affect, Not Likely to Adversely Affect finding and does not require further consultation.

3.2 Areas within the project limits which are identified as Highest Ranked Habitat in NH include the riparian corridors on either side of Bagley Brook, Burleigh Brook and Hubbard Brook. No impacts are proposed to either Bagley or Burleigh Brooks. The project has been designed to minimize impacts to the forested riparian wetlands of Hubbard Brook to the extent practicable and are limited to 29 sq ft of permanent and 31 sq ft of temporary impact due to repair and stabilization of a failing slope drain. This work will improve the functionality of this drain and will not alter the classification of this wetland as Highest Ranked Habitat.

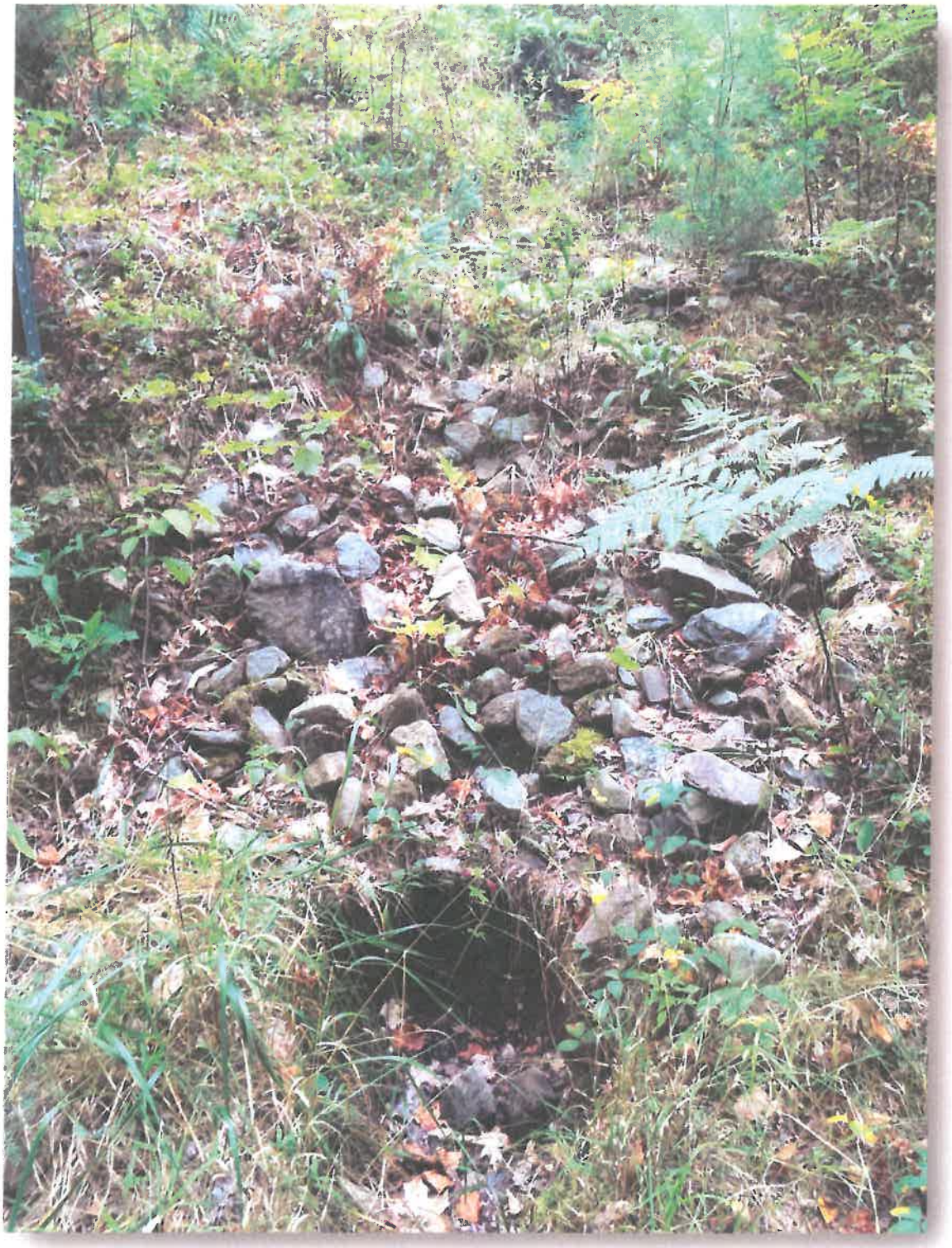
4.1 and 4.2 The project is located within the 100-year floodplain of Burleigh Brook, Hubbard Brook and the Pemigewasset River. Compensatory flood storage is not provided because the project will not result in fill in these floodplains.

5.0 Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding of "No Potential to Cause Effects" was signed into effect by NHDOT Cultural Resources Staff on January 27 2016 (attached).

Thornton-Woodstock, Interstate 93 Roadway Rehabilitation
NHDOT Project No. 40404

Impact Area A & B Slope Drain Repair
September 2015

Thornton-Woodstock, Interstate 93 Roadway Rehabilitation
NHDOT Project No. 40404



Impact Area A & B Slope Drain Repair
September 2015

Thornton-Woodstock, Interstate 93 Roadway Rehabilitation
NHDOT Project No. 40404

Impact Areas C-K
September 2015

Thornton-Woodstock, Interstate 93 Roadway Rehabilitation
NHDOT Project No. 40404

Impact Areas C-K
September 2015

Thornton-Woodstock, Interstate 93 Roadway Rehabilitation
NHDOT Project No. 40404

Impact Areas C-K
September 2015

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

WETLAND PERMIT APPLICATION

for

Thornton-Woodstock, I-93 Pavement Rehabilitation
NHDOT Project No. 40404

Construction Sequence

Construction Sequence

The I-93 Rehabilitation work is anticipated to be completed over 2 construction seasons. The first season will reconstruct the I-93 NB bridges; I-93 SB bridge of US 3 & RR; I-93 NB pavement, guardrail, & drainage; Exit 29 NB On, NB Off, & SB Off ramps; Exit 30 ramps; and perform I-93 NB rock scaling operation. The second season will reconstruct the remainder of the I-93 SB bridges; I-93 SB pavement, guardrail, & drainage; Exit 29 SB On Ramp; and the I-93 SB rock scaling operation. The following erosion control and construction activities are anticipated to be performed for each operation:

1) Install approved contractor detailed erosion control measures and implement the Storm Water Pollution Prevention Plan per the approved contractor detailed plans.

2) I-93 Northbound and Southbound Mainline Roadway Repairs – Exit 29, Thornton, to Exit 30, Woodstock.
    a. Utilizing approved traffic control with barrels or tubular delineators to establish lane closure and one-lane one way work zone traffic control to repair the high-speed travel way and shoulder.
    b. Install double perimeter protection along the shore lines for both water bodies and wetland areas, especially adjacent to Hubbard Brook and Leemans Brook with wetland impacts.
    c. Pavement Rehabilitation (High Speed Lane) – Cold-in-place recycling includes removing existing pavement by cold planing approximately 4" in depth, hauling and processing bituminous material off-site and preparing for replacement, placement of recycled bituminous material, and then placement of bituminous leveling course to establish the travel way cross slope.
    d. Pavement Rehabilitation (Low Speed Lane; Alternate Phase) – The rehabilitation includes placing a bituminous leveling course over the existing pavement to establish a typical travel way cross slope.
    e. Slope Drain Repairs – During I-93 Southbound Low Speed/Outside Lane Guardrail Repairs. Complete slope drain repair and replacements adjacent to Hubbard Brook. Remove existing guardrail; clear and trim existing trees and brush within the work area; install temporary erosion control strategies adjacent to wetlands and uplands; excavate, install stone fill outlet protection, remove existing drainage, install new drainage pipe, end sections and connect to existing drop inlet; and repair slope with humus, seed, slope

stabilization, and turf establishment items.

f. Guardrail Replacement - Remove existing guardrail, remove and dispose of guardrail, offset blocks and posts, install new beam guardrail with steel posts. Grade terminal section platforms and reestablish vegetation with humus, seed, and turf establishment items, and install compliant terminal end units. Grading and humus & seeding operations for guardrail terminal platforms shall be performed during the same work day or temporary erosion control measures will be required.
g. Guardrail Repairs – Remove existing beam rail, remove and dispose of offset blocks and posts as determined, install new steel posts and offset blocks, replace beam rail as needed and rest at 31" height from final wearing course. Grade terminal section platforms and reestablish vegetation with humus, seed, and turf establishment items, and install compliant terminal end units. Grading and humus & seeding operations for guardrail terminal platforms shall be performed during the same work day or temporary erosion control measures will be required.
h. Loose Rock/Hand Scaling – Install approved traffic control barrier and safety fencing to protect the work zone and traffic from loose rock debris; install channel protection, sediment barriers, stone check dams and perimeter controls, as necessary to control sediment and runoff of disturbed areas; clear existing trees and brush within clear zone and rock limits; remove loose rock by hand scaling with approved safety equipment; remove and dispose rock debris; repair ditch line and embankment along rock face; and reestablish vegetation with humus, seed, and turf establishment items.
i. Raise drainage structures.
j. Place 1 ½" wearing course pavement overlay.
k. Place crush gravel for shoulder leveling, as required.

3) I-93 Exit 29 and Exit 30 Ramp Pavement Rehabilitation
   a. Utilizing approved work zone traffic control, establish detour routes and close ramp to perform construction operations.
   b. Remove existing beam rail, remove and dispose of offset blocks and posts as determined, install new steel posts and offset blocks, replace beam rail as needed and rest at 31" height from final wearing course. Grade terminal section platforms and reestablish vegetation with humus, seed, and turf establishment items, and install compliant terminal end units.
   c. Fine grade and repair ramp and guardrail panel with shoulder leveling, humus and turf establishment items.
   d. Adjust drainage structures and curbing to match final grades, as necessary.
   e. Place 2" wearing course and pavement markings.

4) PC-9 Headwall Replacement for Twin 72" RCP Leemans Brook Culvert, US Route 3, Woodstock
The headwall replacement requires removal of the existing failing mortar rubble headwall and replacing with a new concrete headwall.
   a. Erosion control shall be installed and work performed during low flow conditions.

b. Install Clean Water Bypass (CWB) utilizing sand bag cofferdams and temporary drainage pipe or approved CWB strategy to divert flow around excavation, concrete formwork and headwall construction.
c. Headwall replacement consists of removing collapsed headwall and wing stones, performing excavation, compaction of subgrade, installation of new headwall, placement of backfill and stone fill within headwall excavation limits, and stabilizing slopes with turf establishment, seed, fertilizer and matting, as required.

5) I-93 NB and SB Bridges Over US Route 3 at Exit 29, Thornton.
Bridge repairs for NB and SB bridges consists of removing and replacing bridge expansion and plug joints, cold planing existing wearing course, and placing wearing course pavement during roadway wearing course operations.
   a. Utilize Manual on Uniform Traffic Control Devices (MUTCD) temporary traffic control layout with portable concrete barrier Phase 1 layout to protect the work zone and maintaining mainline and ramp traffic, as necessary.
   b. Upon completion of Phase 1 limits, perform traffic control operations to remove Phase 1 pavement markings, install Phase 2 pavement marking and portable concrete barrier. Perform superstructure repairs as noted in Phase 1.
   c. Remove existing wearing course and place final wearing course pavement during roadway wearing course operations.

6) I-93 NB and SB Bridges Over Merrill Access Road, Thornton
Bridge repairs for NB and SB bridges consists of removing existing pavement and barrier membrane, installing a new barrier membrane, replacing plug joints, and placing bridge and roadway wearing course pavements.
   a. Utilize Manual on Uniform Traffic Control Devices (MUTCD) temporary traffic control layout with portable concrete barrier Phase 1 layout to protect the work zone and maintaining mainline and ramp traffic, as necessary.
   b. Upon completion of Phase 1 limits, place an interim 1" wearing course, perform traffic control operations to remove Phase 1 pavement markings, install Phase 2 pavement marking and portable concrete barrier. Perform superstructure repairs as noted in Phase 1.
   c. Upon completion of Phase 2 limits, place an interim 1" wearing course, install pavement markings to open bridge to two-lane traffic.
   d. Remove interim wearing course and place final wearing course pavement during roadway wearing course operations.

7) I-93 NB and SB Bridges Over Mirror Lake Road, Thornton
Bridge repairs for NB and SB bridges consists of replacing the plug joints, cold planing existing wearing course, and placing wearing course pavement during roadway wearing course operations.
   a. Utilize Manual on Uniform Traffic Control Devices (MUTCD) temporary traffic control short-term lane closure layout with barrels, cones or tubular delineators in conjunction with the roadway rehabilitation to protect the work zone and maintaining mainline.

b. Remove existing wearing course and place final wearing course pavement during roadway wearing course operations.

8) I-93 NB and SB Bridges Over US Route 3 and NH Railroad at Exit 30, Woodstock.
Bridge repairs for these two bridges consists of removing and replacing bridge expansion joints, cold planing existing wearing course, and placing wearing course pavement during roadway wearing course operations.
   a. Utilize Manual on Uniform Traffic Control Devices (MUTCD) temporary traffic control layout with portable concrete barrier Phase 1 layout to protect the work zone and maintaining mainline and ramp traffic, as necessary.
   b. Upon completion of Phase 1 limits, perform traffic control operations to remove Phase 1 pavement markings, install Phase 2 pavement marking and portable concrete barrier. Perform superstructure repairs as noted in Phase 1.
   c. Remove existing wearing course and place final wearing course pavement during roadway wearing course operations.

9) Remove all temporary erosion control measures after completion of the segments and work outlined above.